Simpson

INSTRUMENTS THAT STAY ACCURATE

260 Add-A-Tester Adapter

OPERATOR'S MANUAL

AC AMMETER MODEL 653

SIMPSON ELECTRIC COMPANY
5200 W. Kinzie St., Chicago 44, Illinois, ES 9-1121
In Canada, Bach-Simpson, Ltd., London, Ontario

New SIMPSON 260 "Add-A-Tester" Line

TRANSISTOR TESTER, Model 650 . . . . . $26.95
Beta Ranges: 0-10, 0-50, 0-250, (F.S.)
Beta Accuracy: ±3%, with 260 ±5% nominal
Ico Range: 0-100 ua
Ico Accuracy: ±1%, with 260 ±3% (F.S.)

DC VTVM, Model 651 . . . . . $32.95
Voltage Ranges: 0-.5/1.0/2.5/5.0/10/25/50/100/250/500
Accuracy: ±1%, with 260 ±3% (F.S.)
Input Impedance: greater than 10 megs all ranges

TEMPERATURE TESTER, Model 652 . . . $38.95
Temperature Ranges: −50°F to +100°F, +100°F to +250°F
Accuracy: with 260 ±2° (nominal)
Three lead positions provided
Sensing Element: thermistor

AC AMMETER, Model 653 . . . . . $18.95
Ranges: 0-0.25/1/2.5/12.5/25 amps
Accuracy: ±1%, with 260 ±3% nominal
Frequency Range: 50 cycles to 3000 cycles

AUDIO WATTMETER, Model 654 . . . . . $18.95
Load Ranges: 4,8,16,600 ohms
Wattage: Continuous 25 watts (8,600 ohms)
50 watts (4,16 ohms)
Intermittent 50 watts (8,600 ohms)
100 watts (4,16 ohms)
Accuracy: ±5%, with 260 ±10% nominal
Direct reading scale from 17 microwatts to 100 watts

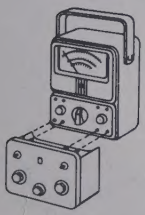
MICROVOLT ATTENUATOR, Model 655 . $18.95
Ranges: 2.5 microvolts to 250,000 microvolts continuously variable in decade steps
Frequency: DC to 20 KC
Accuracy: ±1db

BATTERY TESTER, Model 656 . . . . . $19.95
Checks all radio and hearing aid batteries up to 90 volts at the manufacturer's recommended load, or any external load.

Note: All Simpson 260 Adapters provide for normal 260 usage without disconnecting the adapter.

OPERATOR'S MANUAL

AC AMMETER MODEL 653



Just plug it in

SIMPSON ELECTRIC COMPANY

5200 W. Kinzie St., Chicago 44, Illinois, ES 9-1121

In Canada, Bach-Simpson, Ltd., London, Ontario

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FIGURE 1 – SIMPSON AC AMMETER MODEL 653

OPERATOR'S MANUAL

SIMPSON AC AMMETER MODEL 653

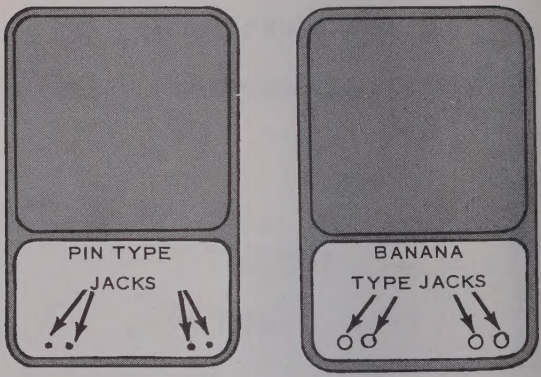
SECTION I

GENERAL DESCRIPTION

INTRODUCTION

The Simpson AC Ammeter Adapter Model 653 is a compact, accurate, wide-range instrument. When it is used in conjunction with a Simpson Model 260 or Model 270 Multimeter, AC currents can be measured over a frequency range of 50 to 3000 cycles per second. This wide frequency range in general exceeds commercial and military power frequency requirements.

The Simpson VOM-plus-adapter concept is completely unique in approach and versatility. Each of the adapter models, of which the AC Ammeter is but one example, provides specific measurement and testing capabilities at a fraction of the cost normally required for separate testers.



(a) Model 260, series II (b) Model 260, series III

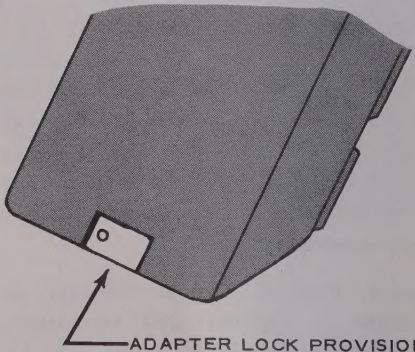


FIGURE 2 – MODEL 260 IDENTIFICATION

ACCESSORIES FURNISHED

Each instrument is furnished with an Operator's Manual and four extra pin-type plugs. The four pin-type plugs are used only when the Model 653 is to be used with a Model 260 Series II (see figure 2 for Model 260 Series II and Series III identification).

SPECIFICATIONS

AC Current:

Ranges: 0-.25/1/2.5/12.5/25 amperes

Accuracy:

Adapter only ±2%

Adapter with Model 260 ±3% (F.S.) nominal

Adapter with Model 270 ±3% (F.S.)

Frequency Response:

Essentially flat from 50 to 3000 cycles per second.

Insulation Level: 600 v RMS (max.)

Power Input: None required.

Size: 5-5/16 x 4-3/8 x 3-7/16 inches.

Weight: 2 lbs.

MODIFICATION KITS

Adapter Case Kit 401 for Model 260 Series III and Model 270.

Use of this kit is optional. The kit converts the Model 260 Series III or the Model 270 VOM produced prior to June 1, 1959. It consists of a modified case which permits latching the Model 653 securely to the underside of the multitester.

Adapter Case Kit 402 for Model 260 Series II.

Use of this kit is optional for this adapter. It includes a modified case which permits latching the Model 653 securely to the underside of the multimeter, and also provides a 50 μA D.C. current range for the Model 260. The 50 microampere range is required for other Adapter Models.

CONTROLS AND CONNECTORS

BINDING POSTS

AC currents to be measured are applied to the Model 653 through two of the six binding posts located along the bottom of the front panel. One of the binding posts (marked ±) is common for all ranges. Each of the remaining five binding posts represents a current range for the instrument.

260 – 653 SWITCH

This is a convenience switch located at the right center of the front panel. It allows the use of the VOM without detaching the Model 653.

260 DIRECT JACKS

The 260 DIRECT jacks are located at the left center of the front panel. When the 260 DIRECT – 653 ADAPTER switch is in the 260 DIRECT position, these jacks are connected directly to the Model 260/270 input jacks marked + and COMMON –.

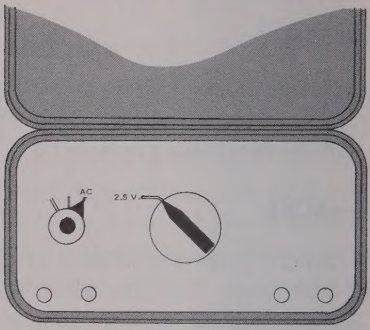
SECTION II

OPERATING INSTRUCTIONS

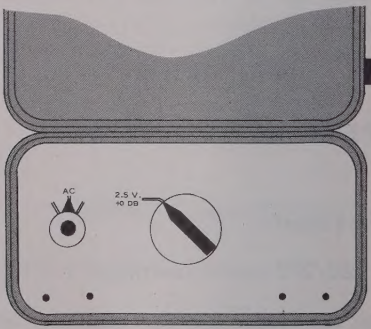
1. Initial Adjustments

a. Model 260/270 control settings.

1. With the Model 653 disconnected, check the meter pointer position for zero indication with the VOM in its operating position. If the pointer is off zero, adjust the bakelite screw just under the meter. Refer to the VOM Operator's Manual for this adjustment.



(a) Model 260 Series III Control Positions



(b) Model 260 Series II Control Positions

FIGURE 3 – MODEL 260 CONTROL POSITIONS FOR USE WITH MODEL 653

2. Set the Model 260/270 for AC operation.

3. Set the Model 260/270 range switch to the 2.5 volts position.

b. Connecting the Model 653 to the Model 260/270.

1. Insert the top four plugs of the Model 653 into the lower four jacks on the front panel of the Model 260/270.

2. Position the locking latch underneath the instrument to secure the two units together.

CAUTION

If your Model 260/270 case does not have the locking provision, avoid applying excessive pressure to the top of the Adapter when it is connected to the VOM, and used in the Adjust-A-Vue position. A modification kit which includes a new case with an adapter lock provision is recommended for optimum rigidity (see page 4).

c. Model 653 Control Settings.

1. Set the 260 Direct – 653 Adapter switch of the Model 653 to the 653 ADAPTER position.

2. Measuring A.C. Current

WARNING

Always remove all power from the circuit to be tested before connecting or disconnecting the test leads, and before changing the range connections of the leads.

a. De-energize the circuit under test.

b. Connect a suitable lead from the ± binding post on the Model 653 to one side of the circuit under test.

c. Select a second binding post which will provide a suitable current indication. When in doubt as to the amount of current to be measured, use the 25A binding post first, and then change to a lower range if the current is within the lower range. Connect a suitable lead from this selected binding post to the other side of the circuit under test.

NOTE

The test leads and connections for steps b and c must be adequate for the circuit under test. The test leads must have ample current carrying capacity and each connection must be tight and offer low resistance.

d. Record the Model 260/270 meter reading indicated on the 2.5 V.A.C. scale.

e. Multiply the reading by the factor indicated above the range binding post used.

3. Using the VOM circuit while the Model 653 is attached.

a. Set the 260 Direct – 653 Adapter switch of the Model 653 at its 260 DIRECT position.

b. Connect the regular VOM test leads to the 260 DIRECT jacks at the left side of the Model 653. Proceed with the standard operating instructions for the VOM, according to its Operator's Manual.

SECTION III

THEORY OF OPERATION

GENERAL

The Model 653 AC Ammeter consists of a current transformer, an accurate load on the secondary and provisions for a voltmeter measurement across the load. Any AC current through the primary is transformer-coupled to produce a proportional AC current in the secondary. The secondary

current passes through the load resistor, producing a voltage across the load resistor which is again proportional to the primary current. The Model 260/270 VOM reads the amount of voltage across the load resistor which is indicative of the amount of current passing through the primary.

With the highly accurate components which are used in the construction of the Model 653 AC Ammeter, the accuracy of measurements obtained is excellent for most applications.

Circuit connections for the Model 653 are the same as for any other type of ammeter. The primary circuit of the transformer is connected in series with the circuit under test, and offers very little impedance in the circuit. The inductive effect of the transformer is negligible for frequencies up through 3000 cycles per second.

SECTION IV

MAINTENANCE

CASE REMOVAL

To remove the instrument from the case, remove the four screws located in the four corners on the back of the instrument case. All of the components are attached to the front panel.

PARTS REPLACEMENT

All of the components of the Model 653 have been engineered for many years of useful life. However, there are conditions under which parts may become damaged or faulty, and require replacement. Refer to the circuit diagram in figure 4 to help identify and locate any suspected part.

In the event of any component failure, order replacement parts from Simpson Electric Company or from any Authorized Warranty Repair Station. A list of these repair stations is included, beginning on page 14.

PARTS LIST

Reference Symbol	Description	Simpson Part No.
T1	Current Transformer	1–118211
S1	Switch, DPDT, slide	1–118192
R1	Resistor, 4.0 ohms ±0.5%, 3 W.	10–805086
	Case, Adapter	10–860379

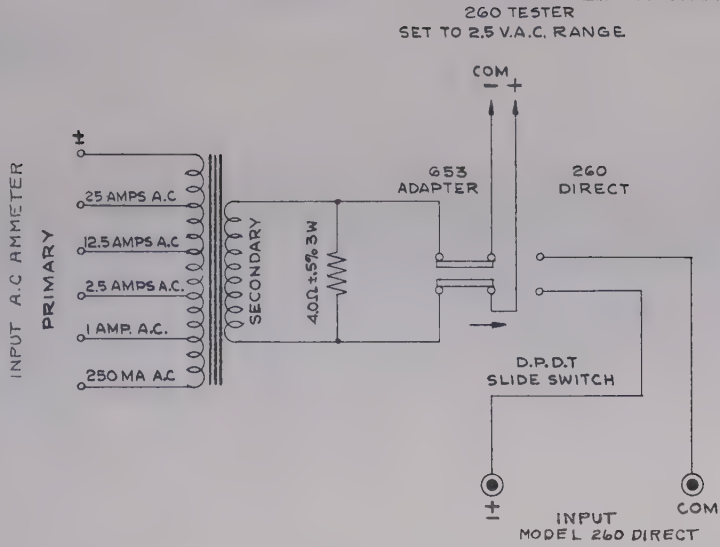


FIGURE 4 – SHCEMATIC DIAGRAM, SIMPSON AC AMMETER MODEL 653

SIMPSON WARRANTY REPAIR STATIONS AND PARTS DEPOTS

*California, Los Angeles
Quality Electric Company
3700 South Broadway
States: So. California below Fresno and Arizona

*California, San Francisco
Pacific Electrical Instrument Lab.
111 Main Street
States: No. California above Fresno and Nevada

Canada
Bach-Simpson Ltd.
1255 Brydges Street
P.O. Box 484
London, Ontario, Canada

*Colorado, Denver
Meter-Master Instrument Service
2379 S. Downing Street
States: Wyoming, Utah, Colo. and New Mexico

Florida, Miami
Barfield Instrument Corp.
4101 N.W. 29th Street

*Parts Depots

*Georgia, Atlanta
Electro-Tech Equipment
690 Murphy Avenue S.W.
States: Alabama, Georgia, Florida,
No. & So. Carolina, and Tenn.

*Illinois, Chicago
Pacific Indicator Company
5217 W. Madison Street
States: Chicago, Wisconsin and Indiana

*Louisiana, New Orleans
Industrial Instrument Works
3328 Magazine Street
States: Arkansas, Mississippi and Louisiana

*Massachusetts, Cambridge
Alvin C. Mancib Company
363 Walden Street
States: Vermont, New Hampshire, Massachusetts,
Connecticut, Rhode Island, and Maine

*Michigan, Detroit
Ram Meter, Inc.
1100 Hilton Road, Ferndale
States: Michigan

*Minnesota, Minneapolis
Instrumentation Services
4807 Idaho Avenue North
States: Minnesota, North and South Dakota

*Parts Depots

*Missouri, St. Louis
Scherrer Instruments
5449 Delmar Blvd.
States: Illinois below Peoria, Iowa, Missouri, and Kansas

*New York, Buffalo
Electrical Instrument Labs.
1487 Hertel Avenue
States: New York State Except Met. N.Y.

*New York 7, New York
Simpson Instrument Service Corp.
27 Park Place
States: Metropolitan New York and New Jersey, above Trenton

New York 13, New York
Electro-Tech Equipment Co.
308 Canal Street

New York, Syracuse
Syracuse Instrument Lab.
2904 South Avenue

*Ohio, Cleveland
Weschler Electric Company
4250 W. 130th Street
States: Ohio and Kentucky

*Parts Depots

Oregon, Portland
The Instrument Laboratory
1316 S.E. 7th Avenue

*Pennsylvania, Philadelphia
Sunshine Scientific Instrument
1810 Grant Avenue
States: Penn. Md. New Jersey below Trenton, Virginia, W. Virginia, Washington, D.C., Delaware

*Texas, Dallas
Nelson Electronic Eng. Co., Inc.
6333 Prospect Avenue
States: Oklahoma and Texas

Utah, Salt Lake City
Salt Lake Instrument Service
2247 Wilson Avenue

*Washington, Seattle
The Instrument Laboratory, Inc.
934 Elliott Avenue West
States: Oregon, Washington, Idaho, and Montana

*Parts Depots

Add-A-Tester Adapter

Model 655

Microvolt Attenuator

Designed for

AUDIO CIRCUITRY DESIGN and
SERVICING, DC CIRCUITRY, and
INDUSTRIAL SERVICING and DESIGN

★

NET PRICE

$18.95

★

SIMPSON ELECTRIC COMPANY

5200 West Kinzie Street • Chicago 44, Illinois

WARRANTY

SIMPSON ELECTRIC COMPANY warrants each instrument and other articles of equipment manufactured by it to be free from defects in material and workmanship under normal use and service, its obligation under this warranty being limited to making good at its factory any instrument or other article of equipment which shall within 90 days after delivery of such instrument or other article of equipment to the original purchaser be returned intact to it, or to one of its authorized service stations, with transportation charges prepaid, and which its examination shall disclose to its satisfaction to have been thus defective; this warranty being expressly in lieu of all other warranties expressed or implied and of all other obligations or liabilities on its part, and SIMPSON ELECTRIC COMPANY neither assumes nor authorizes any other persons to assume for it any other liability in connection with the sale of its products.

This warranty shall not apply to any instrument or other article of equipment which shall have been repaired or altered outside the SIMPSON ELECTRIC COMPANY factory or authorized service stations, nor which has been subject to misuse, negligence or accident, incorrect wiring by others, or installation or use not in accord with instructions furnished by the manufacturer.

Quality is the indispensable component of every Simpson instrument . . . . . .